IN THE CLAIMS:

Please AMEND the claims and new claims as follows:

1. (AMENDED) An optical amplifier comprising:

an optical fiber through which an input light travels, the input light being amplified as the input light travels through the optical fiber via first pumping light traveling through the optical fiber in an opposite direction than the input light;

an optical splitter splitting off a portion of the amplified input light, the first pumping light being controlled in accordance with a monitored optical power of said split portion; and

an optical fiber amplifier, optically connected to the optical splitter, amplifying the input light having said portion split off therefrom via second pumping light,

wherein, when the first pumping light is not being supplied to the optical fiber and is thereby not traveling through the optical fiber, a loss in the optical fiber is less than a difference between a minimum light level prescribed in a system in which the optical amplifier is installed and a minimum light level of the split portion that can be monitored.

2. An optical amplifier according to claim 1, wherein the optical fiber amplifier is a rare earth-doped optical fiber amplifier.

3. An optical fiber amplifier according to claim 1, further comprising an optical isolator between the optical splitter and the optical fiber amplifier.

4. An optical fiber amplifier according to claim 1, further comprising:

a monitor monitoring the optical power of said split portion, to thereby provide said monitored optical power.

5. An optical fiber amplifier according to claim 2, further comprising:

a monitor monitoring the optical power of said split portion, to thereby provide said monitored optical power.

6. An optical fiber amplifier according to claim 3, further comprising:

a monitor monitoring the optical power of said split portion, to thereby provide said monitored optical power.

7. (AMENDED) An optical amplifier comprising:

an optical fiber through which an input light travels, the input light being amplified as the input light travels through the optical fiber via first pumping light traveling through the optical fiber in an opposite direction than the input light;

an optical splitter splitting off a portion of the amplified input light, the first pumping light being controllable in accordance with a monitored optical power of said split portion; and

an optical fiber amplifier, optically connected to the optical splitter, amplifying the input light having said portion split off therefrom via second pumping light,

wherein, when the first pumping light is not being supplied to the optical fiber and is thereby not traveling through the optical fiber, a loss in the optical fiber is less than a difference between a minimum light level prescribed in a system in which the optical amplifier is installed and a minimum light level of the split portion that can be monitored.

8. (AMENDED) An optical amplifier comprising:

an optical fiber through which an input light travels, the input light being amplified as the input light travels through the optical fiber via first pumping light traveling through the optical fiber in an opposite direction than the input light;

an optical splitter splitting off a portion of the amplified input light, the first pumping light being controlled in accordance with a monitored optical power of said split portion; and

an optical fiber amplifier amplifying the input light having said portion split off therefrom via second pumping light,

wherein, when the first pumping light is not being supplied to the optical fiber and is thereby not traveling through the optical fiber, a loss in the optical fiber is less than a difference between a minimum light level prescribed in a system in which the optical amplifier is installed and a minimum light level of the split portion that can be monitored.

9. An optical amplifier according to claim 8, wherein the optical fiber amplifier is a rare earth-doped optical fiber amplifier.

10. An optical fiber amplifier according to claim 8, further comprising an optical isolator between the optical splitter and the optical fiber amplifier.

11. An optical fiber amplifier according to claim 8, further comprising:

a monitor monitoring the optical power of said split portion, to thereby provide said monitored optical power.

12. An optical fiber amplifier according to claim 9, further comprising:

a monitor monitoring the optical power of said split portion, to thereby provide said monitored optical power.

13. An optical fiber amplifier according to claim 10, further comprising:

a monitor monitoring the optical power of said split portion, to thereby provide said monitored optical power.

14. (AMENDED) An optical amplifier comprising:

an optical fiber through which an input light travels, the input light being amplified as the input light travels through the optical fiber via first pumping light traveling through the optical fiber in an opposite direction than the input light;

an optical splitter splitting off a portion of the amplified input light, the first pumping light being controllable in accordance with a monitored optical power of said split portion; and

an optical fiber amplifier amplifying the input light having said portion split off therefrom via second pumping light,

wherein, when the first pumping light is not being supplied to the optical fiber and is thereby not traveling through the optical fiber, a loss in the optical fiber is less than a difference between a minimum light level prescribed in a system in which the optical amplifier is installed and a minimum light level of the split portion that can be monitored.

15. (AMENDED) An apparatus comprising:

an optical amplifier including

an optical fiber through which an input light travels, the input light being amplified as the input light travels through the optical fiber via first pumping light traveling through the optical fiber in an opposite direction than the input light,

an optical splitter splitting off a portion of the amplified input light, the first pumping light being controlled in accordance with a monitored optical power of said split portion; and

an optical fiber amplifier amplifying the input light having said portion split off therefrom via second pumping light,

wherein, when the first pumping light is not being supplied to the optical fiber and is thereby not traveling through the optical fiber, a loss in the optical fiber is less than a

difference between a minimum light level prescribed in a system in which the optical amplifier is installed and a minimum light level of the split portion that can be monitored.

16. (AMENDED) An apparatus comprising:

an optical amplifier including

an optical fiber through which an input light travels, the input light being amplified as the input light travels through the optical fiber via first pumping light traveling through the optical fiber in an opposite direction than the input light,

an optical splitter splitting off a portion of the amplified input light, the first pumping light being controlled in accordance with a monitored optical power of said split portion; and

an erbium doped fiber amplifier (EDFA) including an erbium doped fiber (EDF) through which the input light having said portion split off therefrom travels and is amplified via second pumping light traveling through the EDF,

wherein, when the first pumping light is not being supplied to the optical fiber and is thereby not traveling through the optical fiber, a loss in the optical fiber is less than a difference between a minimum light level prescribed in a system in which the optical amplifier is installed and a minimum light level of the split portion that can be monitored.

17. (AMENDED) An apparatus comprising:

an optical amplifier including

an optical fiber through which an input light travels, the input light being amplified as the input light travels through the optical fiber via first pumping light traveling through the optical fiber in an opposite direction than the input light,

means for splitting off a portion of the amplified input light, the first pumping light being controlled in accordance with a monitored optical power of said split portion; and

an optical fiber amplifier amplifying the input light having said portion split off therefrom via second pumping light,

wherein, when the first pumping light is not being supplied to the optical fiber and is thereby not traveling through the optical fiber, a loss in the optical fiber is less than a difference between a minimum light level prescribed in a system in which the optical amplifier is installed and a minimum light level of the split portion that can be monitored.

18. (AMENDED) An apparatus comprising:

an optical amplifier including

an optical fiber through which an input light travels, the input light being amplified as the input light travels through the optical fiber via first pumping light traveling through the optical fiber in an opposite direction than the input light,

means for splitting off a portion of the amplified input light, the first pumping light being controlled in accordance with a monitored optical power of said split portion; and

an erbium doped fiber amplifier (EDFA) including an erbium doped fiber (EDF) through which the input light having said portion split off therefrom travels and is amplified via second pumping light traveling through the EDF,

wherein, when the first pumping light is not being supplied to the optical fiber and is thereby not traveling through the optical fiber, a loss in the optical fiber is less than a difference between a minimum light level prescribed in a system in which the optical amplifier is installed and a minimum light level of the split portion that can be monitored.

19. An apparatus comprising:

an optical splitter splitting off a portion of an input light having been amplified as the input light traveled through an optical fiber via first pumping light traveling through the optical fiber in an opposite direction than the input light, the first pumping light being controlled in accordance with a monitored optical power of said split portion; and

an optical fiber amplifier, optically connected to the optical splitter, amplifying the input light having said portion split off therefrom via second pumping light,

wherein, when the first pumping light is not being supplied to the optical fiber and is thereby not traveling through the optical fiber, a loss in the optical fiber is less than a difference between a minimum light level prescribed in a system in which the optical amplifier is installed and a minimum light level of the split portion that can be monitored.

20. An apparatus according to claim 19, wherein the optical fiber amplifier is a rare earth-doped optical fiber amplifier.

21. An apparatus according to claim 19, further comprising an optical isolator between the optical splitter and the optical fiber amplifier.

22. An apparatus according to claim 19, further comprising:

a monitor monitoring the optical power of said split portion, to thereby provide said

monitored optical power.

23. An apparatus according to claim 20, further comprising:

a monitor monitoring the optical power of said split portion, to thereby provide said monitored optical power.

24. An apparatus according to claim 21, further comprising:

a monitor monitoring the optical power of said split portion, to thereby provide said monitored optical power.

25. An apparatus according to claim 19, wherein the optical fiber is an erbium doped fiber.

26. An apparatus according to claim 19, wherein there are no optical components between the optical splitter and the optical fiber amplifier.

27. An apparatus comprising:

an optical splitter splitting off a portion of an input light having been amplified as the input light traveled through an optical fiber via first pumping light traveling through the optical fiber in an opposite direction than the input light, the first pumping light being controlled in accordance with a monitored optical power of said split portion; and

an optical fiber amplifier amplifying the input light having said portion split off therefrom via second pumping light,

wherein, when the first pumping light is not being supplied to the optical fiber and is thereby not traveling through the optical fiber, a loss in the optical fiber is less than a difference between a minimum light level prescribed in a system in which the apparatus is installed and a minimum light level of the split portion that can be monitored.

28. An apparatus according to claim 27, wherein the optical fiber amplifier is a rare earth-doped optical fiber amplifier.

29. An apparatus according to claim 27, further comprising an optical isolator between the optical splitter and the optical fiber amplifier.

30. An apparatus according to claim 28, further comprising:

a monitor monitoring the optical power of said split portion, to thereby provide said monitored optical power.

31. An apparatus according to claim 29, further comprising:

a monitor monitoring the optical power of said split portion, to thereby provide said monitored optical power.

32. An apparatus according to claim 27, wherein the optical fiber is an erbium doped fiber.

33. An apparatus according to claim 27, wherein there are no optical components between the optical splitter and the optical fiber amplifier.

34. An apparatus comprising:

an optical splitter splitting off a portion of an input light having been amplified via first pumping light traveling in an opposite direction than, and along the same travel path as, the input light, the first pumping light being controlled in accordance with a monitored optical power of said split portion; and

an optical fiber amplifier, optically connected to the optical splitter, amplifying the input light having said portion split off therefrom via second pumping light,

wherein, when the first pumping light is not being supplied and is thereby not traveling in an opposite direction than, and along the same travel path as, the input light, a loss in the travel path is less than a difference between a minimum light level prescribed in a system in which the apparatus is installed and a minimum light level of the split portion that can be monitored.

35. An apparatus according to claim 34, further comprising an optical isolator between the optical splitter and the optical fiber amplifier.

36. An apparatus according to claim 34, further comprising:

a monitor monitoring the optical power of said split portion, to thereby provide said monitored optical power.

37. An apparatus according to claim 35, further comprising:

a monitor monitoring the optical power of said split portion, to thereby provide said monitored optical power.

38. An apparatus according to claim 34, wherein there are no optical components between the optical splitter and the optical fiber amplifier.

39. An optical amplifier according to claim 1, wherein the optical fiber is doped with a rare earth element.

40. An optical amplifier according to claim 7, wherein the optical fiber is doped with a rare earth element.

41. An optical amplifier according to claim 8, wherein the optical fiber is doped with a rare earth element.

42. An optical amplifier according to claim 14, wherein the optical fiber is doped with a rare earth element.

43. An apparatus according to claim 15, wherein the optical fiber is doped with a rare earth element.

44. An apparatus according to claim 16, wherein the optical fiber is doped with a rare earth element.

45. An apparatus according to claim 17, wherein the optical fiber is doped with a rare earth element.

46. An apparatus according to claim 18, wherein the optical fiber is doped with a rare earth element.

47. An apparatus for receiving an optical signal transmitted through an optical fiber in a first direction, comprising:

a pumping light source to output a pumping light to the optical fiber so that the pumping light travels through the optical fiber in a second direction opposite to the first direction;

an optical coupler to receive the optical signal from the optical fiber and to output the received optical signal and a monitor signal of the received optical signal, the pumping light source being controlled in accordance with the monitor signal to thereby control the pumping light output by the pumping light source; and

an optical amplifier to amplify the received optical signal output from the optical coupler,

wherein, when the pumping light is not being output by the pumping light source and the pumping light is thereby not traveling through the optical fiber, a loss in the optical fiber is less than a difference between a minimum light level prescribed in a system in which the apparatus is installed and a minimum light level of the monitor signal that can be monitored.

48. An apparatus according to claim 47, wherein the optical fiber is doped with a rare earth element.

49. An optical transmission system, comprising:

an optical transmitting station to transmit an optical signal through an optical fiber in a first direction; and

an optical repeater, coupled to the optical fiber, including:

a pumping light source to output a pumping light to the optical fiber so that the pumping light travels through the optical fiber in a second direction opposite to the first direction,

an optical coupler to receive the optical signal from the optical fiber and to output the received optical signal and a monitor signal of the received optical signal, the pumping light source being controlled in accordance with the monitor signal to thereby control the pumping light output by the pumping light source and

an optical amplifier to amplify the received optical signal from the optical coupler and to output the amplified optical signal,

wherein, when the pumping light is not being output by the pumping light source and is thereby not traveling through the optical fiber, a loss in the optical fiber is less than a difference between a minimum light level prescribed in a system in which the optical repeater is installed and a minimum light level of the monitor signal that can be monitored.

50. An optical transmission system, according to claim 49, wherein the optical fiber is doped with an rare earth element.

51. An optical transmission system, comprising:

an optical repeater, coupled to an optical fiber through which an optical signal is transmitted in a first direction, including:

a pumping light source to output a pumping light to the optical fiber so that the pumping light travels through the optical fiber in a second direction opposite to the first direction,

an optical coupler to receive the optical signal from the optical fiber and to output the received optical signal and a monitor signal of the received optical signal, the pumping light source being controlled in accordance with the monitor signal to thereby control the pumping light output by the pumping light source, and

an optical amplifier to amplify the received optical signal output from the optical coupler; and

an optical receiver, operatively coupled to the optical repeater, to receive the amplified optical signal,

wherein, when the pumping light source is not outputting the pumping light so that the pumping light is thereby not traveling through the optical fiber, a loss in the optical fiber is less than a difference between a minimum light level prescribed in a system in which the optical repeater is installed and a minimum light level of the monitor signal that can be monitored.